Nuclear Power in the 2005 Annual Energy Outlook

J. Alan Beamon
Energy Information Administration
April 14, 2005

www.eia.doe.gov
Energy Information Administration

Reference Case Summary

- All existing nuclear plants will continue operating through 2025.
- While new nuclear plants are not expected, nuclear capacity will grow as existing plants are upgraded.
  - Between 2003 and 2025 3,500 megawatts of capacity upgrades added.
- Nuclear generation increases by 66 billion kilowatthours (9 percent) between 2003 and 2025.
- Nuclear's share of electricity generation declines from 20 percent in 2003 to 14 percent in 2025.
- Natural gas, coal, and renewable technologies are expected to be the most competitive options for meeting growing electricity needs.

Factors Affecting Nuclear

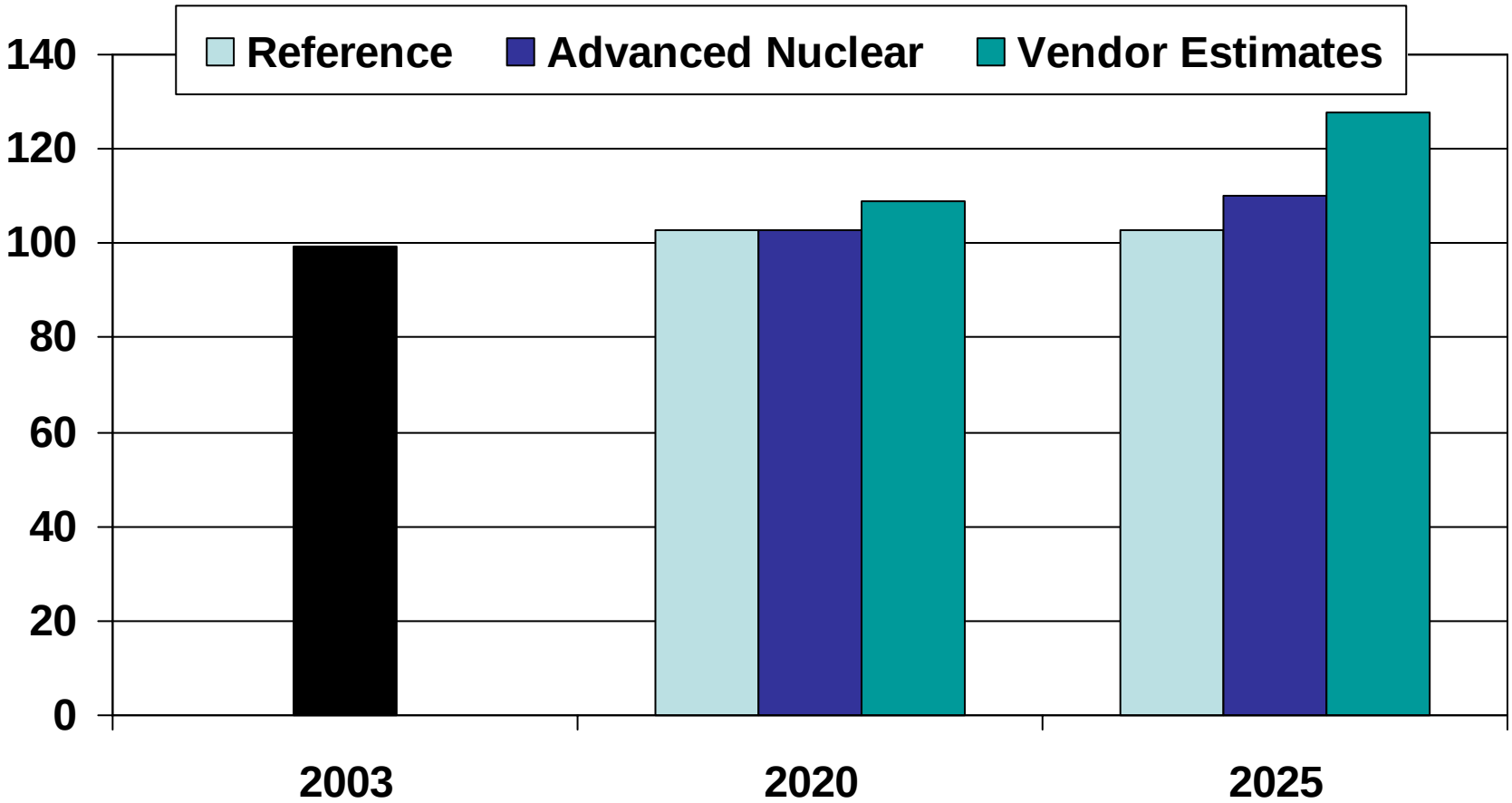
- Uncertainty about:
  - Cost of new designs
  - Financing costs in the new electricity marketplace
  - Price Anderson renewal
  - An untested licensing and permitting process
  - Public acceptance
  - Long-term waste disposal
  - Future environmental regulations

- New nuclear programs:
  - Pre-certification of designs
    - Approved – System 80+ PWR, ABWR, and AP1000
    - In process – ESBWR and AP1000
  - Early site approval and banking
    - In process - Entergy, Exelon, and Dominion
  - New combined operating license process
    - NuStart Consortium (TVA, GE, and Westinghouse) to test
    - Duke
  - DOE Nuclear 2010 program to support first-of-kind-engineering costs (FOAKE)

Three Nuclear Cost Cases

Case	Overnight Capital Cost 2015 / 2025 (2003 dollars per KW)	Cost Basis
Reference	$1,854 / $1,761	Based on the costs of plants recently built in the Far East
Advanced Nuclear Cost	$1,679 / $1,410	20 percent reduction from Reference case by 2025
Vendor Estimates	$1,435 / $1,097	Plant vendor estimates for new designs

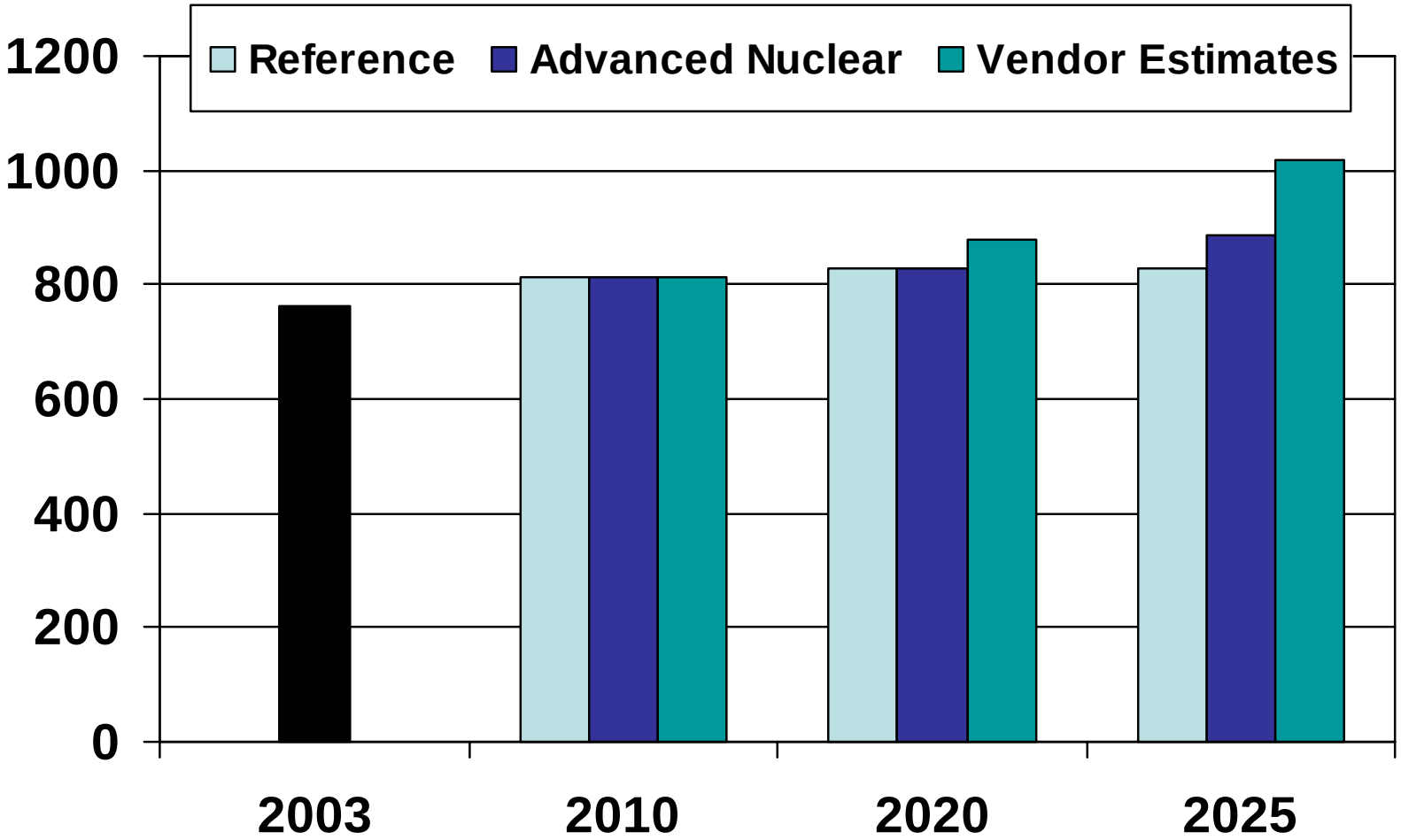
Nuclear Capacity in Three Cases
(thousand megawatts)



www.eia.doe.gov
Energy Information Administration

Nuclear Generation in Three Cases

(billion kilowatthours)



www.eia.doe.gov
Energy Information Administration